

# Remarkable Endemism in Moths at White Sands National Monument

Presented by Eric H. Metzler







712 km<sup>2</sup>  
275 mi<sup>2</sup>

Largest  
gypsum  
dune field  
in the  
world.

Galapagos  
Islands of  
North  
America.





Study  
area is a  
transect  
3 km  
(1.9 mi)  
long.


15  
sample  
sites in  
4 diverse  
habitat  
types.






# History of Entomology Research at White Sands


1. 1947 H. F. Strohecker described two subspecies of Gryllacrididae

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2. 1950 C. P. Stroud published a cursory inventory of all insect orders. Listed 452 species of insects including 20 species of Lepidoptera – 9 species of moths – 3 species of Noctuidae.




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3. 2007 Eric Metzler  
invited to do a study of  
moths in the Monument.  
Ten year study 2007 thru  
2017. Field work 12  
months/year for four  
years. I am now making  
identifications and doing  
descriptive work.



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4. 2009 David Lightfoot, Univ. of New Mexico, invited to do survey of arthropods in White Sands and Cuatro-cienegas Reserve in Mexico. One new species of Scythrididae from White Sands.







I selected four disparate habitat types. All in close proximity to road access for convenience of placing and retrieving black light traps. Created a transect along south-eastern boundary.



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Gypsum  
Sand No  
Vegetation

Interdunal  
Vegetation








Edge of  
Dunes

Basin  
Vegetation,  
No Gypsum







# Initial Results are Impressive!

About than 500 Species of  
Moths in 4 years.

Excludes most species of  
micro-lepidoptera.


Specially adapted plants and animals of the white sands ecosystem are well known.












Until 2007 we did  
Not Know there  
are White Moths at  
White Sands  
National  
Monument









20 undescribed  
species unknown  
from any other  
location.

Species cryptic  
with each other.



# Two of four new species of *Chionodes*




*Chionodes*

n. sp. number 1



*Chionodes*

n. sp. number 2



Four species of  
Noctuidae and  
two species of  
Tortricidae  
described thus  
far:





*Protogygia whitesandsensis*



*Euxoa lafontainei*






*Aleptina arenaria*



*Schinia poguei*



Many Dark Colored  
species, have White  
Forms in the Dunes.  
Some don't Look Like  
the Same Species.  
Identifications are  
tough.

Here are two examples.





*Euxoa pleuritica*



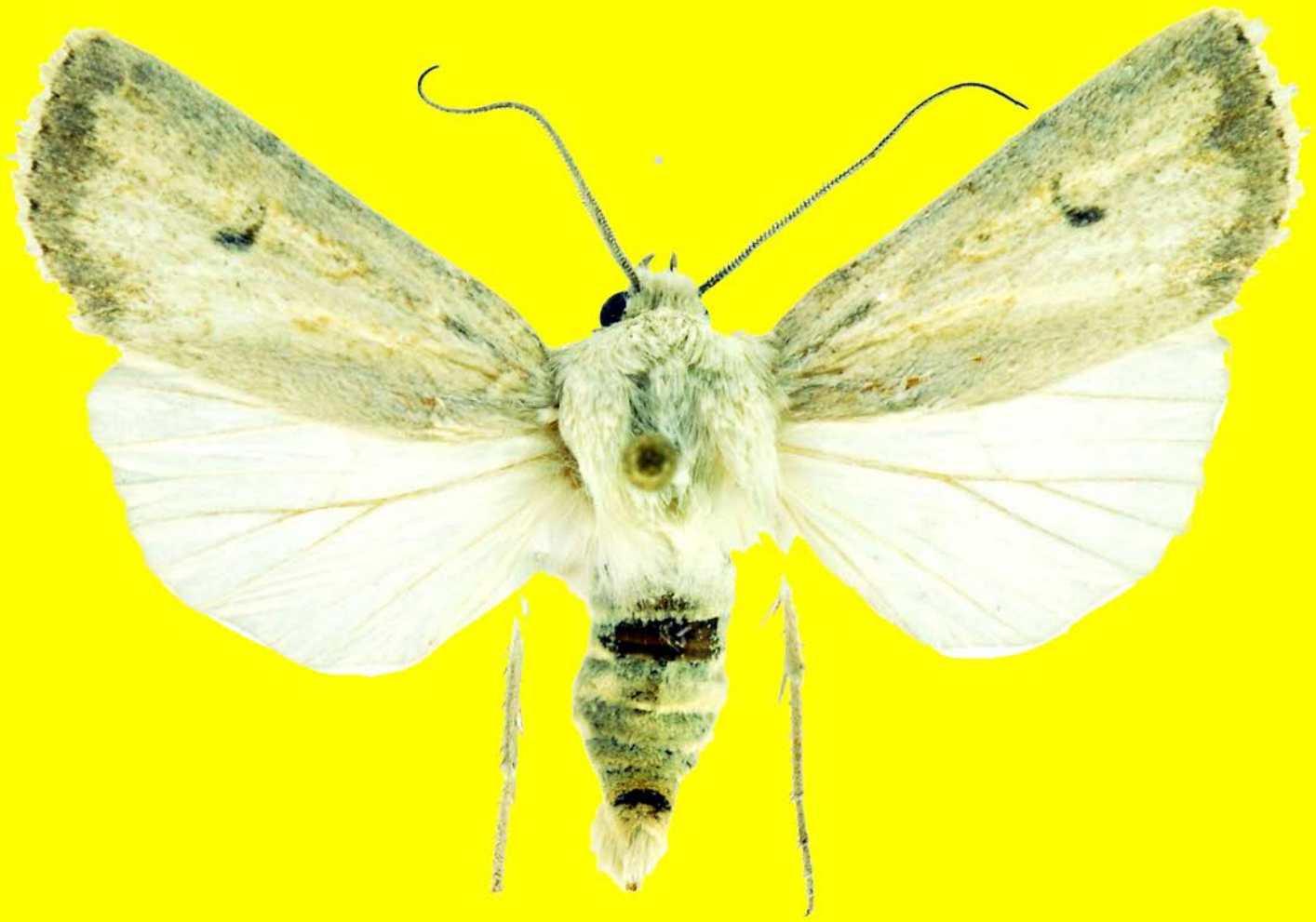
*Euxoa pleuritica*






*Euxoa misturata*






*Euxoa misturata*




For me, all of this  
Evolution is more  
Remarkable when  
I consider the  
Dunes are only  
7,000 years old !




New research shows  
the same species of  
plants in the dunes  
and outside the dunes  
have different  
chemical signatures  
and different  
microbes.





Caterpillars in the dunes  
have a different diet than  
caterpillars eating the  
same plant species  
outside the dunes.

More to come...



Only three  
more slides  
to go !!!











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**New Mexico State University**

**Mike Pogue – USNM**

**John Brown – USNM**

**Don Lafontaine – Canadian National  
Collection**





Questions ??

Suggestions ??

The tip jar is in  
the back !!